

BENEATH THE SURFACE

EXPANDING PPF POSSIBILITIES THROUGH MATERIALS SCIENCE INNOVATION

If you're like most paint protection film (PPF) manufacturers, you're barely scratching the surface of your products' potential. Your imagination may be limitless, but the materials available to you are not. The right TPU supplier can open up possibilities beneath the surface, leveraging integrated, streamlined innovation processes – from formulation to testing all the way through production – to help you develop new products and applications, expand existing markets, and appeal to new customers.

PROBLEM

Product Development Processes Discourage Innovation

PPF manufacturers typically choose from a limited menu of standard products available from film processors, and those products may or may not meet the needs of the end user. Even when those users have needs beyond the limits of off-the-shelf products, the process for finding innovative solutions has been time-consuming, cumbersome and prohibitive.

Some caution is not unreasonable. Consumers increasingly expect extended warranties on their PPF purchases, and manufacturers offering 10-year warranties on their products rightly expect assurances from film processors that the product will last. They can make those assurances of previously tested products, but new formulations require new tests. The process of developing a new formulation and performing traditional life expectancy and durability tests can take years.

That's time and money most manufacturers simply can't spare, leaving little choice but to default to off-the-shelf options. Any end user hopes for innovative solutions to new or emerging PPF challenges are scuttled before they're even voiced.

IT DOESN'T HAVE TO BE THIS WAY.

OBJECTIVE

PPF Tailored to Your Customers' Needs

The entrenched limitations of off-the-shelf PPF products stand in stark contrast to the wide variety of applications and environments that may interest end users. A customer in Phoenix is likely to prioritize resistance to heat and UV radiation. Someone in Buffalo is more likely to value protection against colder weather, snow and road salt. Rural drivers who deal with residue from farm machinery or gravel roads and parking lots may see chip and scratch resistance and self-healing properties as a way to maintain the value of their vehicles. Thinking globally, acid rain is an issue in parts of the world, but the composition varies from region to region.

Some requests may be less practical but no less valuable in the eyes of customers. Interest in matte and semi-gloss finishes and non-traditional colors and graphics aren't new, but options remain somewhat limited. Even cosmetic adjustments to formulations can trigger changes in performance and require robust testing.

TPU formulations can be tailored to produce PPF properties that protect against impacts, environmental conditions, and chemical compounds, and produce interesting aesthetic effects. It's not happening because of a persistent adherence to traditional product development and testing processes, hindering communication between the various parties in the PPF value chain. As a result, you and your customers lack the ability to influence product innovation.

WE CAN DO BETTER.



BEYOND THE SURFACE

EXPANDING PPF POSSIBILITIES THROUGH MATERIALS SCIENCE INNOVATION



SOLUTION

Integrated Product Development

Lubrizol Engineered Polymers has a long history of materials science innovation in TPU for paint protection film, but our role in the PPF value chain has been singular, as it is for film processors, liner manufacturers, adhesive and coating suppliers, and process technologies. The fragmented nature of this value chain hampers communication among the parties and impedes innovation.

Let's look at the industry's traditional approach to testing, for example. Standardized tests, such as QUV accelerated weathering, xenon arc testing, and outdoor weathering tests, are used for common PPF product attributes, but innovation by definition exists outside what would be considered common. New formulations with the potential to deliver previously unattainable properties require new tests to determine the efficacy of those formulations. Existing tests aren't designed to

ACCELERATED UV TEST DURATION BY TEST METHOD*

| EXPOSURE | STANDARD | TEST TIME |
|---------------|------------|------------|
| South Florida | ASTM D1435 | 1 year |
| QUV | ASTM G154 | 1200 hours |
| Super UV | Custom | 2 days |

*Correlation of exposures based on best estimation from scientific testing

answer those questions, and even if the test can be adjusted to find the right answer, doing so can waste valuable time and resources. Remember, these are lifecycle tests that can take 1-2 years to complete under typical protocols.

The materials scientists at Lubrizol can develop and use non-standard, accelerated test methods that shrink timelines from years to days and enhance data collection and analysis, allowing for more aggressive R&D and streamlined innovation in material formulation. As an example, Lubrizol has the ability to compress years of damaging UV radiation effects into just days or weeks of testing time using the EYE Super UV Tester. This advanced equipment, in the hands of Lubrizol scientists with years of experience in correlative studies of the behavior of polymers and performance additives, allows product developers to quickly confirm data through iterative development with high relative predictability to real life outdoor exposure.

That pairing of expertise and advanced equipment is unique to Lubrizol, but to take full advantage of these capabilities we need to work closely across the supply chain to develop new products that meet the changing needs of the end user. More specifically, we need to work with you. As the PPF manufacturer, you are uniquely positioned to bring the voice of the customer to product development and push innovation in TPU formulations and, ultimately, PPF.

Acting as the hub of a more integrated, innovation-focused product development process, Lubrizol Engineered Polymers can leverage enhanced, accelerated testing processes and streamlined communication across the value chain to drive customer-focused innovation to benefit you and your customers.



TO LEARN MORE visit go.lubrizol.com/beneaththesurface or email ppf@lubrizol.com